



## Case report

# Atypical presentation of Morgagni hernia: Bowel loops in the neck

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## ABSTRACT

**Introduction:** Morgagni hernia is a rare congenital anomaly caused by the fusion defect between the septum transversum and the sternum. Patients may be asymptomatic or present with respiratory symptoms, abdominal pain, retrosternal pain, abdominal fullness, or gastrointestinal obstruction. Chest X-ray and thoracic computed tomography (CT) are the most commonly used modalities in imaging.

**Aim:** We describe an adult case in which the transverse colon was herniated from the retrosternal area to the thyroid gland without a history of trauma or surgery.

**Case study:** A 24-year-old female patient living in the countryside presented to our hospital with the complaints of indigestion and chest pain persisting for 2 years. In the thorax CT examination of the patient, it was observed that the transverse colon had herniated to the retrosternal region and then to the neck.

**Results and discussion:** Most acquired anterior diaphragmatic hernias are due to blunt or penetrating traumatic injury. However, there are also case reports describing iatrogenic diaphragmatic hernias following a sternotomy performed during thoracic or cardiac surgery. In Morgagni hernia, the most frequently herniated organs are the greater omentum and transverse colon. There are also reports, albeit rarer, describing the herniation of the stomach, liver and small intestines.

**Conclusions:** Morgagni hernia is a very rare type of hernia, especially in adult patients. The diagnosis of these patients can be easily made based on thoracic CT findings.

## 1. INTRODUCTION

Morgagni hernia was first described in 1769 by the anatomist and pathologist Giovanni Morgagni.<sup>1,2</sup> This defect between the septum transversum and the sternum may also be called the foramen of Larrey or Morgagni. Congenital diaphragmatic hernia occurs in approximately 1 in 3300 live births<sup>2</sup>. Morgagni hernia incidence is 1 case in 2000–5000 and it constitutes 3%–4% of congenital diaphragmatic hernias. Congenital diaphragmatic herniations are most commonly caused by impaired adhesion of the pericardium to the diaphragm. In 90% of cases, abdominal organs are herniated into the thorax from the right side through a retrosternal diaphragmatic defect.<sup>1,2</sup>

Left-sided herniation is less common, and it is thought to be caused by the pericardium. Increased intra-abdominal pressure has been associated with Morgagni hernia, particularly in the adult population.<sup>3</sup>

Chest X-ray and thoracic computed tomography (CT) are the essential tools assisting in the diagnosis of Morgagni hernia.<sup>3,4</sup> Greater omentum, transverse colon, stomach and small intestine are the abdominal structures that herniate most frequently into the thorax.<sup>5</sup> The treatment of Morgagni hernia is surgery with a transthoracic, transabdominal, laparoscopic or thoracoscopic approach.<sup>6,7</sup>

## 2. AIM

In this paper we are presenting the case of an adult in which the transverse colon was herniated from the retrosternal area to the thyroid gland without a history of trauma or surgery.

## 3. CASE PRESENTATION

A 24-year-old female patient living in the countryside presented to our hospital with the complaints of indigestion and chest pain persisting for 2 years. The patient also had a long-standing complaint of swelling in the left half of the neck. Thoracic CT was performed due to bowel sounds being heard on her chest and palpable swelling in the left half of the neck. The thorax CT examination of the patient revealed that the transverse colon was herniated into the retrosternal area (Figures 1 and 2). In addition, it was observed that the herniated transverse colon continued superiorly from the retrosternal area, exited the thoracic cavity, and continued in the midline up to the suprasternal area, and after this level, it reached the thyroid gland in the left half of the neck (Figure 3). When the medical history of the patient was examined in detail, it was determined that there was no history of penetrating or blunt abdominal trauma. After the evaluation of clinical information and imaging findings, Morgagni hernia was considered.

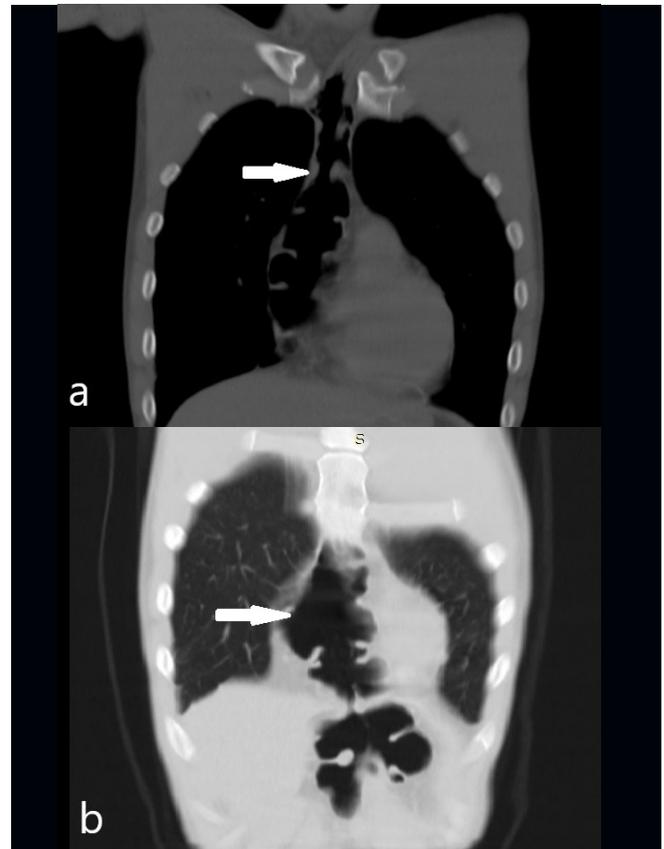


Figure 1. Coronal image of the mediastinum (a) and lung parenchyma (b), showing the herniation of the transverse colonic loops into the thorax.

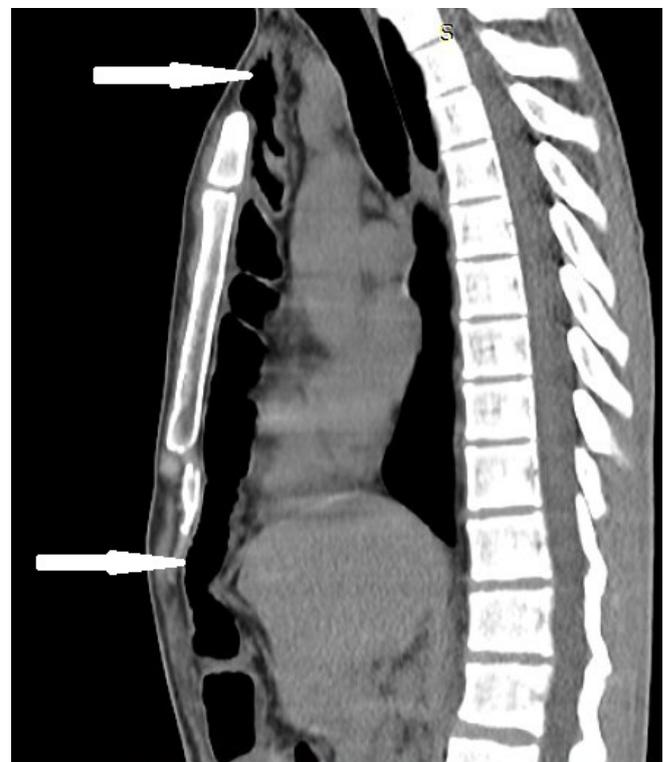
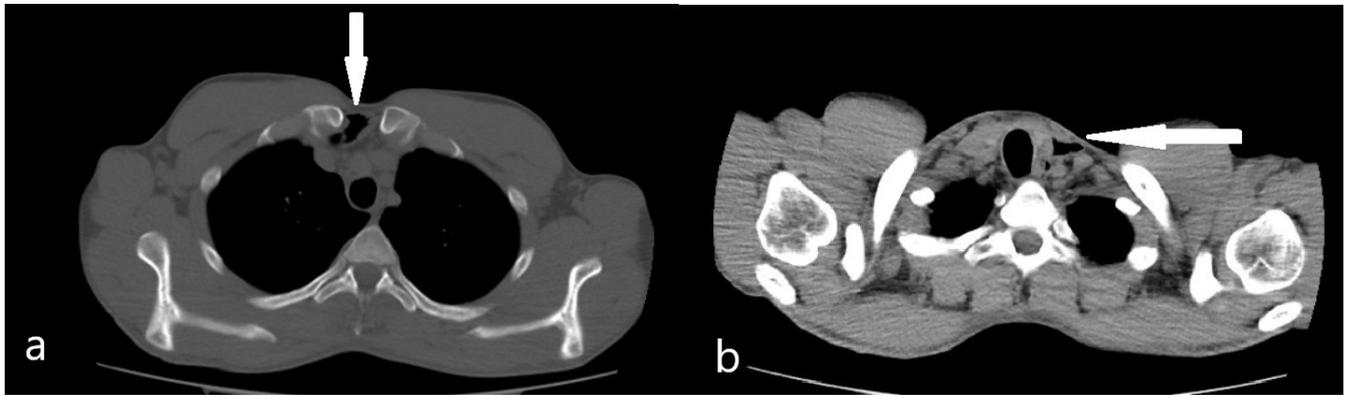


Figure 2. Sagittal reformatted images showing the colon loops extending superiorly from the retrosternal area.



**Figure 3.** Axial computed tomography images revealing that the colon, which is in the midline of the neck in the supra-sternal area, has moved more superiorly to the left half of the neck and extended to the neighborhood of the thyroid gland.

## 5. DISCUSSION

Morgagni hernia accounts for only 3%–4% of pediatric and adult diaphragmatic hernias.<sup>7,8</sup> Congenital and early childhood cases are thought to result from a fusion defect between the septum transversum and the sternum. In older ages, non-traumatic or non-iatrogenic cases are much rarer.<sup>9</sup> Most acquired anterior diaphragmatic hernias result from blunt or penetrating traumatic injuries. There are also case reports describing iatrogenic diaphragmatic hernias after sternotomy performed during thoracic or cardiac surgery.<sup>10</sup>

In Morgagni hernia, the defect is usually small and complaints are related to the size of the hernia and herniated organs. Therefore, the symptomatology is variable and some cases are asymptomatic while others may present with abdominal pain, indigestion, constipation, retrosternal pain and acute respiratory distress.<sup>10,11</sup> Urgent surgical treatment is required in case of impaired blood flow to herniated intestines or other organs. Surgical treatment is recommended in asymptomatic patients to prevent the risk of complications after diagnosis.

In Morgagni hernia, the most frequently herniated organs are the greater omentum and transverse colon.<sup>11,12</sup> There are also reports, albeit rarer, describing the herniation of the stomach, liver and small intestines. However, in classic Morgagni hernia, it is typical for the herniated organs to be confined to the retrosternal area. What makes our case interesting is that the colon was not confined to the retrosternal area as would be expected, but it extended to the thyroid gland in the neck.<sup>13</sup> In this case, the absence of penetrating, blunt trauma or thoracic surgery history suggests that the defect is congenital. As far as we know, no similar case has been described in the literature.

The most important clinical examination finding in the diagnosis of diaphragmatic hernia cases is decreased breath sounds or colon sounds coming from the chest. Chest X-ray and thorax CT are very useful in the diagnosis.<sup>14</sup> If only omental herniation is present, chest X-ray findings may mimic a mediastinal mass, in which case the thorax would be a very useful problem solver.<sup>14,15</sup>

## 6. CONCLUSIONS

Morgagni hernia is a very rare type of hernia, especially in adult patients. The diagnosis of these patients can be easily made based on thoracic CT findings. Emergency surgery may be required in cases where the herniated bowel is obstructed and the blood supply to the bowel wall or other herniated organs is impaired.

### Conflict of interest

The authors declare that they have no conflict of interest.

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